# PLANNING FOR ELECTRIFICATION

Ontario Power Generation / Feb 27, 2019



### **Ontario's Electricity Sector Emissions Have Fallen Drastically...**



ONTARIOPOWER GENERATION

### **Electricity is the Lowest Emitting Major Sector in Ontario**





## Leverage Ontario's Clean Electricity to Reduce Transportation Emissions



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# Impact of EV's on Ontario's Electricity System



### Lots of Investment since 2000





### **But, Electricity Demand Collapses**



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### **Electricity Math**





Pull Costs out of the System

**Possible Solutions** 

MWh

 Difficult because of contractual obligations, but some progress being made Electrification – Increase Consumption

- Consuming surplus removes deadweight loss from system
- Electricity can be put to a productive use, creating jobs and building the economy

### **Benefits and Impact of Electrification**

**Ontario Electricity Demand** 





### **EVs Can Lower Electricity Prices**



![](_page_10_Picture_2.jpeg)

### **Managing Electric Vehicle Demand will be Essential**

Electricity Demand and EV Charging Profiles

 

 22,000
 Overnight charging occurs when electricity demand is at its lowest

 16,000
 Image: Convenience charging occurs at the same time as peak electricity demand

 12,000
 Image: Convenience charging occurs at the same time as peak electricity demand

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Overnight Charging

24,000

On-Peak Charging

-Ontario Electricity Demand

GENERATION

### **Unmanaged EV Demand Will Require New Generation**

![](_page_12_Figure_1.jpeg)

Base EV Penetration, High EV Penetration, Base EV Penetration, High EV Penetration, Base EV Penetration, High EV Penetr

# **Electrification Strategy**

ONTARIO

![](_page_13_Picture_1.jpeg)

# As Ontario's largest, clean, low-cost generator we can help deliver a future powered by made-in-Ontario electricity.

![](_page_14_Figure_1.jpeg)

![](_page_14_Picture_2.jpeg)

## Efficient Electrification: A balanced approach to carbon reduction.

### **Cost-Effective Reduction of GHGs**

Ontario's electricity has one of the lowest carbon intensities in the world.

### **Reduce Electricity Rates**

Put downward pressure on electricity rates by spreading fixed costs over a larger amount of electricity consumption.

![](_page_15_Picture_5.jpeg)

### Canadian Clean Energy and Electrification Assessment

![](_page_16_Picture_1.jpeg)

Task 1: Canadian Electric Sector Model Development (Underway - EPRI Funding)

![](_page_16_Picture_3.jpeg)

Task 2: Canadian Energy End-Use Model Development Task 3: Clean Energy and Electrification Assessment

![](_page_16_Picture_6.jpeg)

Task 4: Communication and Outreach

**Canadian Assessment** 

#### **Province-Level Assessment**

ULINLIATION

### Potential for Efficient Electrification Varies by End-Use Application

![](_page_17_Figure_1.jpeg)

### **Electrification Activity Areas**

![](_page_18_Figure_1.jpeg)

## **Questions?**

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![](_page_19_Picture_2.jpeg)

## THANK YOU.

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